

A broad silvery band tapering on the caudal peduncle, continued to end of middle caudal rays. No humeral or caudal spots.

XXV.—*Scorpions and Solifugæ collected by Captain S. S. Flower in the Anglo-Egyptian Sudan.* By S. HIRST.

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SCORPIONS.

Buthus citrinus, H. & E.

Loc. Wady Halfa.

Buthus acutecarinatus, Sim.

Loc. Khartoum and the Senaar Province; in the British Museum collection there are present also examples from Atbara (*Dr. S. K. Malouf*), and from Thebes and Ghizeh (*S. S. F.*) in Egypt.

Buthus minax, L. Koch.

Loc. Captain Flower collected examples of this species at Khartoum; the mouth of the Pinder River; Senaar and Roseires. There are also specimens in the British Museum collection from Abyssinia.

Remarks.—The male of *Buthus* * *minax* differs from that of *B. emini*, Poc., principally in the structure of the tail, the upper keels of which are very much weaker, the lateral ones being exceedingly weak or absent in segments 2-4; moreover, the upper keel of the fifth caudal segment is represented by only a very short series of granules and the intercarinal spaces of the caudal segments are not nearly so strongly granular as is the case in *B. emini*.

In the male of *B. emini*, on the other hand, segments 1-4 of the tail are each furnished with ten well-defined granular keels, the upper and lateral keels being quite distinct and composed of separate granules, which show no tendency to fuse with one another; the fifth caudal segment has a well-marked upper keel, which runs the entire length of the segment.

[*Buthus polystictus*, Poc., is very closely allied to *B. minax* and *B. emini*, and Prof. Kraepelin † believes that it is only

* Birula's observations on *Buthus minax* and its allies (*Sitz. Ber. Ak. Wiss.* cxvii. p. 141, 1908) should be consulted.

† *Zool. Jahrb. (Syst.)* xviii. p. 560 (1903).

a variety of the latter. I think that it is undoubtedly more closely allied to *B. emini* than to *B. minax*, but that it should be regarded as a distinct species and not merely as a variety. The male can be readily distinguished from that of *B. emini* by its much narrower hand, which is only slightly broader than the brachium, and longer and more slender fingers; moreover, the movable finger has only a very slight low lobation, and the immovable finger is without any definite lobe. The hand and fingers, indeed, are very similar in shape in both sexes in *B. polystictus* and resemble closely those of the female of *B. emini*. In the male of *B. emini*, however, the hand is very much broader than the brachium, and the fingers are very different in shape to those of the female; they are shorter and stouter, and both the movable one and the immovable one in the adult are furnished with very distinct lobes, that of the immovable finger being especially strong. In addition to the specimens of *B. polystictus* determined by Mr. Pocock, I have examined sixteen males and forty-three females and young from Berbera, and eleven males and twenty-two females from the Wagar Mountains behind Berbera; these specimens were collected by Mr. G. W. Bury.]

Buthus quinquestriatus, H. & E.

Loc. Captain Flower collected examples of this well-known species at Wady Halfa, Khartoum, and the Blue Nile.

[A specimen of the following species from the Sudan has been acquired by the Trustees of the British Museum.]

Parabuthus liosoma hunteri, Poc.

Parabuthus hunteri, Poc. J. Linn. Soc., Zool. xxv. p. 309 (1895).

Additional Loc. Omdurman, Sudan. A large male example collected by Capt. H. N. Dunn, R.A.M.C.

Measurements of this specimen in mm.—Total length 99; length of carapace 11·5, of fifth caudal segment 12·5; width of fifth caudal segment 7·25.

Remarks.—This scorpion was described from specimens obtained at Duroor and Suakin. As pointed out by Mr. Pocock, it can be distinguished from *Parabuthus liosoma* [typical form] by the greater slenderness of the tail and by the presence of a basal tubercle on the fingers of the hand, &c. It must be noted, however, that the width of the tail varies somewhat even in specimens from the same locality.

The example from Omdurman has a more slender tail than any of the original specimens.

Pandinus exitialis, Poc.

Scorpio exitialis, Poc. Ann. & Mag. Nat. Hist. (6) ii. p. 249 (1888).

Pandinus exitialis, Krpln. Das Tierr. Scorp. &c. p. 119 (1899); Krpln. Zool. Jahrb. (Syst.) xviii. p. 567 (1903).

Loc. Abu Haraz, Blue Nile (*Capt. S. S. Flower*); a small male example measuring 85 mm. in length.

Remarks.—This example from the Blue Nile is a slight variety of *P. exitialis*. The granulation of the under surface of the humerus of the palp is very weak, except at the edges. Four complete keels and a short inner keel are present on the dorsal surface of the hand, and the tubercles are confluent in places, but not nearly to the same extent as in the variety, which I describe below under the name *sudanicus*.

In his account of *P. exitialis*, Mr. Pocock says that there is a single dry specimen from Schoa in the British Museum collection. There are present, however, in the collection, three dry examples (co-types) of this species, all of which were collected by Sir W. C. Harris at Schoa. Four complete keels are distinctly visible on the hand of one of these specimens, and traces of these keels can be seen in the other two and in the variety from Gebel Mel.

[*Var. sudanicus*, var. nov.

This variety may be compared with the typical form of the species (from Schoa) as follows:—Dorsal surface of the hand much smoother, nearly the entire surface of the lobe being furnished with low anastomosing ridges instead of isolated tubercles (these ridges are smaller and narrower than those of *P. gregoryi*, and they are finely, but distinctly, punctured as in that species); the keels on the under surface of the hand are more sparsely and weakly granular than in the typical form. Proximal half of the under side of the humerus granular as in the typical form. Tarsal lobes of posterior legs with three spines, which are arranged in the same way as in the typical *P. exitialis*; the total number of spines on the anterior side of the tarsus is four, and the total number on the posterior side six or seven. Pectinal teeth twenty-one or twenty-two in number. Last abdominal sternite without any trace of keels.

Measurements in mm.—Total length 111; length of carapace 18.

Loc. Gebel Mel, 12 miles south of Obeid, Sudan; a single female example captured by Capt. H. N. Dunn, R.A.M.C.]

SOLIFUGÆ.

Galeodes arabs, C. L. Koch.

Loc. Wady Halfa (*Surgeon-Major Penton and Capt. S. S. Flower*); Omdurman and Khartoum (*Capt. S. S. Flower*). The Museum possesses also examples from the Nabardi Mines (Sudan), from the White Nile, and from a number of places in Egypt.

Remarks.—A large male specimen (in spirit) collected by Capt. Flower at Wady Halfa differs from all others of this species, which I have seen, in having the spinal armature of the tarsi of both the legs of the third pair | 2+2+2 | 2 | instead of | 1+2+2 | 2 |. The armature of the legs of the second pair is, as usual, | 1+2+2 | 2 |. In all other details both of colour and structure this specimen agrees with some quite typical specimens of *G. arabs* from the same locality. The young example from Shendy, Sudan, which was determined by Dr. Tullgren * as *G. araneoides*, Pallas, is, perhaps, only an aberration of *G. arabs*, similar to this one from Wady Halfa.

OTHOES, gen. nov.

Patella and tibia of maxillipalp (of female) without either spines or bristles. Legs long and slender; the tarsus of the first leg apparently without claws and furnished at the end with a dense scopula of fine hairs, which are forked at their extremities. Tarsi of second and third legs with the spinal

Fig. 1.



Fig. 2.



Fig. 1.—*Galeodes arabs*, C. L. Koch, side view of claws of fourth leg.

Fig. 2.—*Othoes floweri*, gen. et sp. n. " " "

armature | 1+1+2+2 | 2(1) |; as will be seen from this formula, an additional unpaired spine is present on the proximal segment, the spines on the anterior side of this segment being four in number (two of which are unpaired),

* In Jägerskiöld's 'Results of the Swedish Zoological Expedition to Egypt, 1901,' Uppsala, pt. 3, no. 21 A, p. 1 (1909).

and those on the posterior side only two in number. *Claws of the second, third, and fourth pairs of legs much longer than in Galeodes*, those of the legs of the fourth pair being the longest (fig. 1 and fig. 2).

Othoes floweri, sp. n.

Immovable finger of the *chelicera* with the second and fifth teeth (counting from the distal end) the largest; the posterior of the two teeth which are present between these major teeth is exceedingly minute; first tooth of the row of large size and separated from the second by a fairly large gap. Between the two large teeth of the movable finger, also, two minor teeth are present, and the posterior of them is very minute (fig. 3). *Maxillipalp* very long and slender,

Fig. 3.



Othoes floweri, gen. et sp. n., chelicera from the inner side.

and its femur is furnished below, on the inner side, with a row of about five or six fairly strong spines and also with weaker spines; patella and tibia without either thorns or bristles, the latter narrowed distally; tarsus freely movable and more slender and not so abruptly narrowed as is the case in the species of *Galeodes*—moreover, it is furnished with a scopula composed of forked hairs, similar to those at the end of the tarsus of the first leg. Handles of the maleoli about equal in length to or a little less than the greatest length of the blades. Metatarsus of fourth leg with the spinal armature $(1+1) + 1+2+2$, but the proximal unpaired spines (enclosed in brackets in the formula) are much weaker than the others. The spinal armature of the tarsus of the fourth leg is $| 2+2+2 | 2 | 0 |$.

Colour.—Body, chelicerae, and legs pale yellow; a fine blackish line is present, however, along the anterior margin of the head-plate, and the ocular tubercle is also black, but it has an ill-defined longitudinal yellowish streak in the middle. Patella and tibia of maxillipalp black and the tarsus slightly darkened; the basal segments of this appendage are pale yellow.

Measurements in mm.—Length of body 22·5; greatest breadth of anterior margin of head-plate 5·75; length of chelicera 9, of palp (excluding the coxa) 29·75, of patella of palp 11, of tibia of palp 6·75, of tarsus of palp 2, of fourth leg 44·5.

Loc. Wady Halfa; a single female specimen, collected by Capt. S. S. Flower.

Desia sp.

Loc. Khartoum and the Blue Nile; owing to the absence of the male, I have not ventured to determine this species.

BIBLIOGRAPHICAL NOTICE.

Catalogue of the Lepidoptera Phalaena in the British Museum.
Vol. X. *Noctuidæ.* By Sir GEORGE F. HAMPSON, Bart. London:
Printed by Order of the Trustees, 1910. Price 20s. 8vo.
Pp. xix, 829.

It will hardly be disputed that Sir George F. Hampson is one of the most energetic and hard-working of living Entomologists, when we consider that this huge volume, the thickest of the whole series, was published at the end of the same year, the beginning of which saw the appearance of vol. ix. of the series, though that volume was smaller and contained only 552 pages. The fascicule of coloured plates belonging to vol. x., however, is not yet ready, but will appear shortly. The present volume is devoted to the subfamily *Erastrinae*, and includes 1222 species belonging to 136 genera, illustrated by 214 figures in the text, showing wings, neuration, head, &c.

We believe that another volume will probably complete the *Noctuidæ*, of which the author has already described 6197 in vols. iv.—x. of his work.

The *Erastrinae*, as the term is used by the author, include all the British moths classed under the section *Minores* by Guenée, except *Acontia luctuosa* and *Erastria venustula*; the latter, however, is described by Hampson in his vol. viii. p. 493, n. 4201, as *Monodes venustula* in the subfamily *Acronyctinae*.

The British species described and sometimes figured in vol. x., under *Erastrinae*, are *Eublemma ostrina*, Hübn. (p. 118), *E. parva*, Hübn. (p. 136), *Lithacodia fasciana*, L. (= *fuscula*, Schiff. (p. 539), *Eustrotia uncula*, Clerck (p. 578, fig.), *Eustrotia olivana*, Schiff. (= *bankiana*, Fabr.) (p. 580), *Erastria trabealis*, Scop. (= *sulphuralis*, L.) (p. 660, fig.), and *Tarache lucida*, Hufn. (= *solaris*, Schiff.). Except *Lithacodia fuscula*, all these species are local in Britain (though one or two are common in their special